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ABSTRACT

This paper outlines the instructional systems model developed by the Korean Educational Development Institute (KEDI). Before discussing the system itself, the speaker outlines the Korean mastery learning strategy on which it is based. The mastery learning approach has nine phases: diagnosis of learning deficiency, compensatory programs, presentation of instructional objectives, teacher instruction, formative tests, remedial programs, enrichment programs, cooperative learning activities, and summative tests. While the mastery learning strategies address only the teaching/learning aspect of education, the KEDI instructional program model was developed as a subsystem of the total educational system. The KEDI model addresses itself to the five steps involved in instruction for a learning task: planning, diagnosis, teaching/learning, extended learning, and evaluation. The speaker discusses outcomes of the program's four tryouts and the cost implications of the program. (Author/IRT)

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KEDI INSTRUCTIONAL STRATEGIES

Yung Dug Lee

A contribution of the IIEP Seminar on "Teaching-learning strategies and educational planning"
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I. Introduction

Koreans are now living in a time of abrupt and rapid change. This phenomenon of change is affecting all sectors of the Korean society - political, economic, social and educational. Since all Korean people are being affected by it education must bear a great responsibility in preparing the young to meet this challenge. It is on these future generations that the country has to rely for continuing social improvement.

For this reason, the nation's educational programs need to be continually reevaluated and improved to remain responsive to changing requirements. Learning objectives, subject matter, teaching methods and all other aspects of the educational process need to be continually reviewed and revised. Despite our efforts for educational reform in the past years there yet remain many unsolved, fundamental problems that must be addressed.

A quarter of the total population is enrolled in schools of various kinds and levels in Korea today. Nearly twenty per cent of the annual government budget is set aside to cover public education expenditures. A basic question with which we must be concerned is the effectiveness of our educational programs in relationship to national needs and expenditures for education. There is general agreement among Korean educators that student achievement at the elementary-middle school level is too low and that the quality of student learning in the rural areas is markedly inferior to the

average achievement of those students attending urban schools. Also, it has been argued that schools do not contribute sufficiently to the students' self-concept and character formation nor to helping him develop appropriate values and attitudes. Abrupt growth in school enrollments have resulted in class sizes which make it increasingly difficult for teachers to have personal contact with their students. Teachers' efforts to personalize instruction according to individual differences in attainments and aptitudes is largely frustrated due to the sheer numbers of students with which the teacher must deal. These problems are compounded by the qualitative and quantitative inadequacies of teaching-learning materials. There are virtually no instructional materials available for most classrooms except textbooks and the traditional blackboard.

It is in this situation that the Korean Educational Development Institute seeks to develop new educational systems which, hopefully, can help solve some of the problems. A consequence of these efforts by KEDI has been the development of an instructional systems model which is the major subject for discussion in this paper.

II. Korean Mastery Learning Strategy: A Forerunner of KEDI Instructional Strategies

Korean mastery learning strategies may be considered as the forerunner of KEDI instructional strategies in that the latter are based upon the same basic assumptions and premises that characterized the Korean mastery learning project. The basic hypothesis underlying the mastery learning strategies was clearly expressed when Bloom(1968) wrote ".... if the students are normally distributed with respect to aptitude, but the kind and quality of instruction and the amount of time available for learning are made appropriate to the characteristics and needs of each student, the majority of students may be expected to achieve mastery of the subject."

In designing instructional strategies to be implemented in Korean schools, the researchers who are keenly aware of the unique situations of Korean schools set forth some practical conditions that must be met by any innovative instructional strategies. They were as follows: (1) the strategies should be effective in a classroom situation with a large number and a heterogeneous group of students; (2) they should not require an unduly additive load on the part of classroom teachers; (3) they should not presuppose a large amount of time spent for retraining of the teachers and (4) they should be adaptable to a wide range of existing school situations, and should not require set patterns of personnel organization, facilities, and instructional schedules.

After a series of laborious exploration, deliberation, and

field validation, the researchers came out with the instructional strategies for mastery learning which are schematically shown in the following flow chart. It represents an instructional sequence for a unit of instruction or lesson.

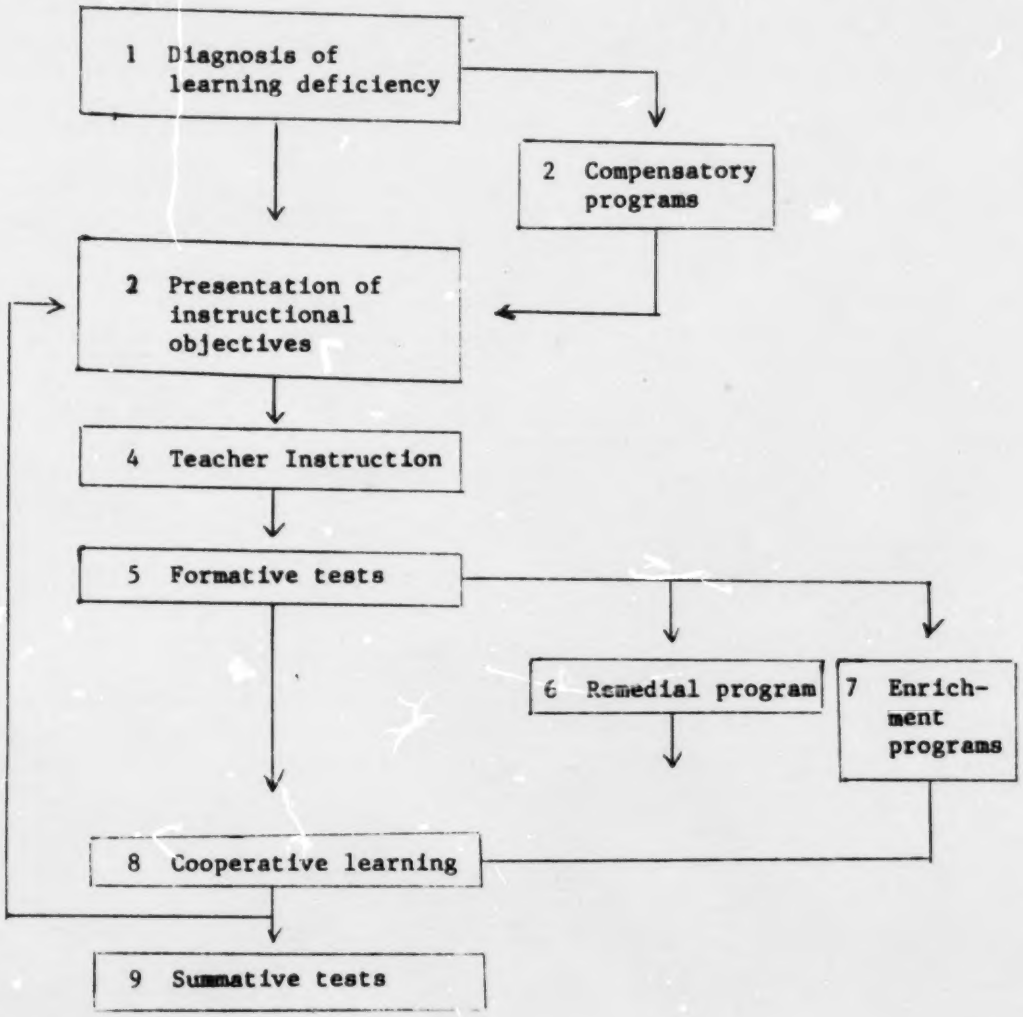


Figure 1. Flow chart of mastery learning strategies

Brief explanations of each phase of the flow chart are given below.

1) Diagnosis of learning deficiency: Learning deficiency accumulated through repeated failures in previous learning is a major cause for future retardation in learning. Therefore, at the beginning of the instruction, teachers should make an effort to identify such deficiencies and needs of each student. A diagnostic test was prepared for every unit in the subject and administered to the students.

2) Compensatory programs: Several programmed units for compensatory learning were developed for each unit and provided to those students who had been identified by means of the diagnostic test as having important deficiencies in their prerequisite learning.

3) Presentation of instructional objectives: As a part of the strategies, teachers were encouraged to inform students of the nature of the task to be learned, the procedures to be followed, and the standards of performance to be expected of students when learning is completed. For this purpose, a detailed teacher's guide for each instructional unit has been prepared and distributed to individual teachers.

4) Teacher instruction: An effective use of teaching and learning time was especially e phasized, including utilization of charts and AV materials in place of time-consuming blackboard writing, notetaking, etc.

5) Formative tests: Formative tests were given to the students as soon as the students completed a sub-unit of a learning task. These formative tests were designed to reveal particular difficulties encountered by some of the students and to reinforce the learning of those students who have already mastered the unit. The tests were scored by the students themselves and usually took 10 to 15 minutes for administration and scoring.

6) Remedial programs: For those students who were identified as having failed in achieving mastery of a particular unit or sub-unit of instruction, programmed units were provided for the remedial study. These programs were designed to help each student overcome the specific difficulties which he still needed to remedy. On the average, a remedial program took 30 to 40 minutes for independent study.

7) Enrichment programs: For a group of students who were identified as having already mastered a given unit, enrichment programs were provided for their continued work on higher level of learning.

8) Cooperative learning activities: Cooperative learning activities were designed to help each student master the given unit by examining the questions in the formative tests through small group discussions and work with special guidance from the teacher. It was expected that the students "teach" and learn from each other in a small group process characterized by cooperation.

9) Summative test: At the completion of a unit or units of a course, a final summative test was given to the students to determine whether or not they have finally mastered the learning task at hand. These summative tests were developed on the basis of the criterion-referenced measurement scheme, and may be used as a measure for quality control and further improvement of the total teaching-learning process.

The Korean Institute for Research in the Behavioral Sciences attempted in June, 1969 its first pilot study (Kim, 1970) in a middle school in Seoul, while the Educational Research Center of Seoul National University carried out its tryout (Lee, 1971) in an elementary school in November of the same year with significant success. Through these successful initial pilot programmes Korean mastery learning projects have been gradually expanded in the terms and range of the subject matter included. With establishment of KEDI the mastery learning project at the elementary school level was discontinued while the mastery learning project for middle school is still being widely diffused in many classrooms.

It should be made very clear that the mastery learning project has opened a new avenue for more systematic and massive innovative efforts to improve Korean education. Major staff researchers and consultants of KIRBS and ERC who worked on the mastery learning projects have been pulled together to form the core members of the new organization, the Korean Educational Development Institute.

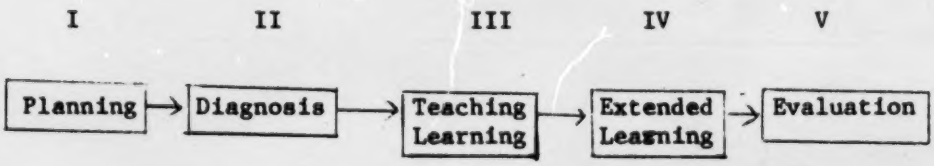
III. KEDI Instructional Programmes

As indicated earlier, in the basic notions and premises there are few differences between the mastery learning and KEDI instructional strategies. There are, however, differences in approaches to educational innovation. KEDI instructional programmes were developed as a sub-system of a total educational system change strategies, while the mastery learning strategies were addressed to the teaching-learning aspect only. As mentioned previously the mastery learning strategies are adaptable to a wide range of school situations and do not require a set pattern of personnel organization, facilities, instructional schedules. The KEDI instructional strategies, however, reflect changes brought about in other sub-system(s). For example, KEDI is trying to improve the school management pattern of Korean schools, and the proposed change in school management is based on the KEDI instructional strategies. A close interactive relationship is maintained between curriculum development and the new instructional system.

Another important area where a significant departure from the mastery learning strategies appears is the teacher instruction phase. At this phase of mastery learning, teachers are given sufficient freedom to use the period as they choose. In the KEDI instructional strategies, however,highly specified modes of teaching are suggested to teachers, and suggested modes of teaching vary depending on the characteristics of subject matters and the types of objectives. For this purpose, KEDI has developed sub-models for each of the major subject-matters in addition to an overall instructional systems

model(KEDI, 1973) which is presented in the ensuing pages. As a part of instructional innovation activities, KEDI is developing a wide range of instructional resources, including teacher's guides, programmed materials, student workbooks, instructional television and radio programs, and various evaluation instruments.

The following contains some of the specifics of the KEDI instructional system. According to the instructional model, instruction for a learning task follows five steps - planning, diagnosis, teaching/learning, extended learning, and evaluation.[1]



The first step is - planning - in which a lesson plan and a management plan for each learning task are made. The instructional objectives are identified - and their interrelationships are analysed. Detailed plans for student learning activities are made as well as the plan for teacher's activities. These plans will specify instructional sequences, choices of teaching media

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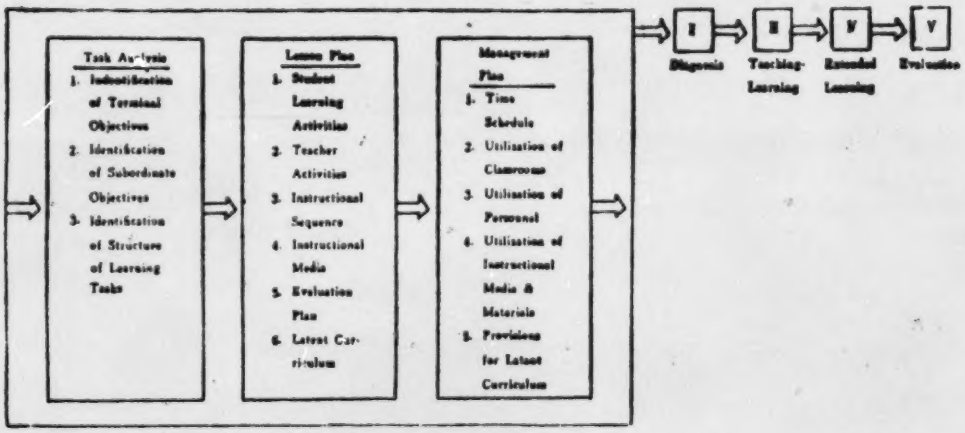
[1] In this Model, an instructional unit is defined as a learning task requiring approximately eight to sixteen lesson hours of instruction. In designing an instructional unit, consideration is given to the unit structure in textbooks as well as to the internal structure of the learning tasks.

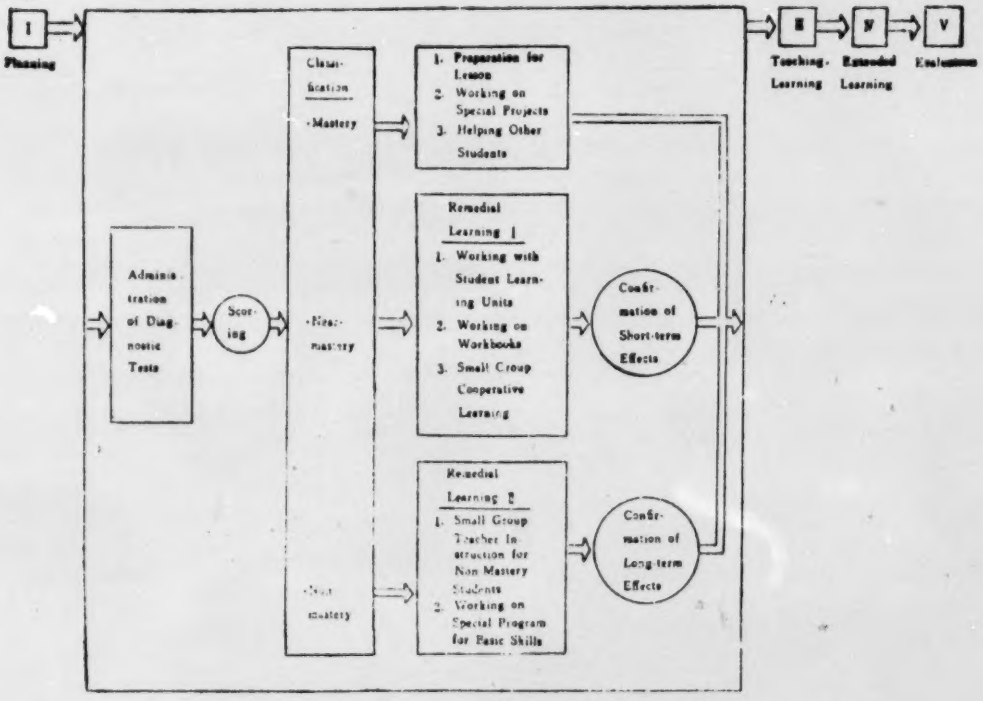
and the means by which student learning will be evaluated. Finally, the management plan will include time scheduling, utilization of classrooms and personnel, and utilization of instructional media.

The task analysis and lesson and management plan, along with the teacher's guide for each unit,will be developed by KEDI's research staff. They are distributed to individual teachers, so that they may carefully study the learning objectives, and the structure of the learning task in the teacher's guide prior to undertaking the actual instruction in their classrooms.



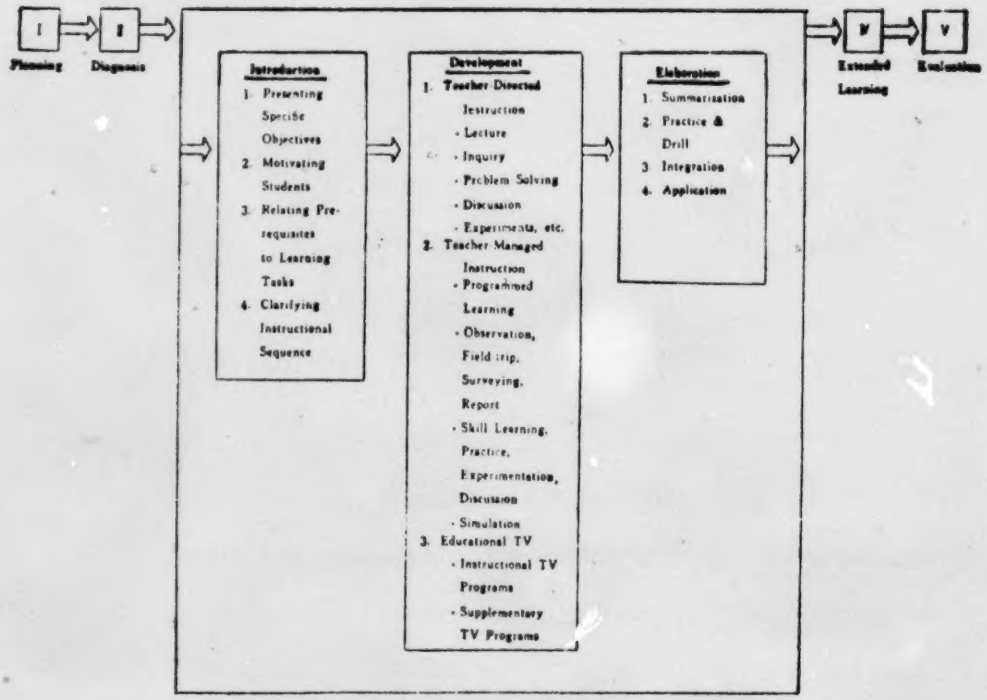
The second step is student diagnosis. The purpose of this step is to identify any deficiencies the student may have in entry-level skills prerequisite to the learning task. Remedial instruction will be provided to remedy any deficiencies revealed by the diagnostic tests. After the diagnostic tests are administered to the students - the teacher will use the results to select the most appropriate learning experiences for each student. Students

who have mastered the prior learning tasks can help other students or restudy the units. Students who have only minor deficiencies can do remedial work with programmed instruction, workbooks or be tutored by other students. Students with major deficiencies will also receive remedial instruction in teacher-directed small group sessions.



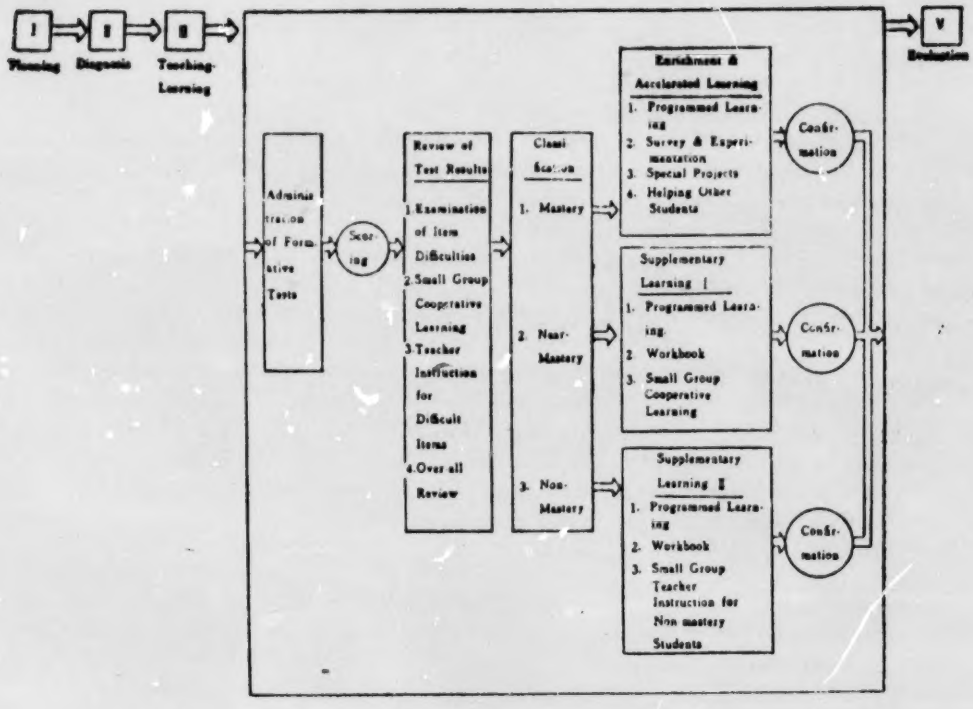
The third step is the teaching/learning stage. It is in this stage that the principal teaching and learning activities take place. The teaching/learning stage can be further divided into three steps: Introduction, Development and Elaboration. In the introduction, the teacher presents the specific learning objectives for the unit to the students - in order to motivate

them and help each student relate his previous experiences to the present learning task. In the development phase, the content of the instructional unit is presented to students. This includes teacher-directed instruction, such as the lecture, and teacher-managed instruction such as programmed instruction, surveying, observation field trips, experimentation and instructional television and radio programs. In this way various methods and materials may be employed in the teaching/learning process. Instructional activities uniquely suited for the particular subject-matter will also be used. The last step in the teaching/learning process is elaboration. In the elaboration step the teacher summarizes what has been studied, ensures student learning through drill and practice

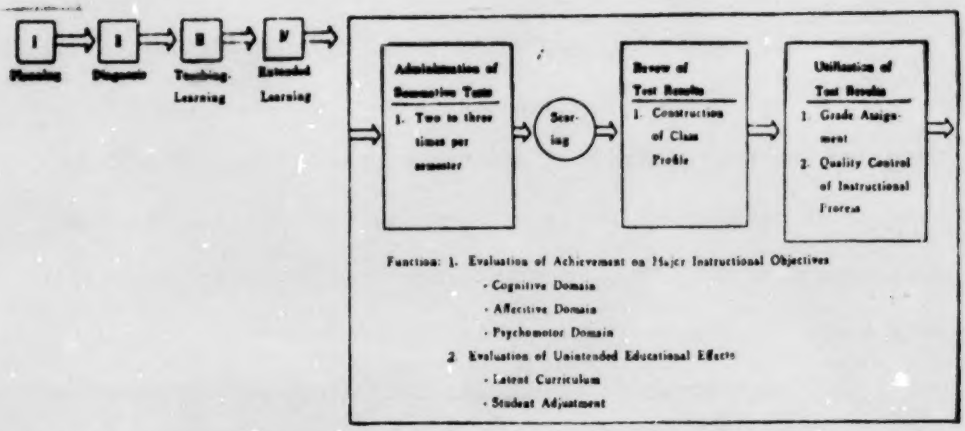


and helps the students in making applications and generalizations of what they have learned.

The fourth phase in the instructional model is the extended learning phase. Administration of formative tests and provisions for enrichment through accelerated and supplementary learning are the major activities in the extended learning stage. Formative tests are given to students during the course of instruction in order to identify particular difficulties and to improve instructional activities accordingly. These are relatively simple tests and can be completed and self-scored by the student in 10 to 15 minutes. When the tests are administered, efforts are made to minimize students anxieties. The formative testing is an integral part of the learning process and is not used to evaluate the student or to determine his grade. For those students who demonstrate mastery on the formative test, special projects or programmed instruction are provided for enrichment. These students may also be used to tutor slower classmates, thus reinforcing their own learning. For those who achieve only partial mastery of the task, appropriate additional materials or tutoring are prescribed.



The fifth and last step in the instructional systems model is evaluation. It is in this step that the student's terminal achievement is assessed through summative evaluation. Summative testing is to evaluate the student's achievement in the major instructional objectives as well as to assess any unintended outcomes. These objectives may be in the cognitive, affective or psychomotor domain.



A summative test may be given at the completion of each unit but, to avoid the drastic reduction of instructional time this causes, teachers are advised to give a summative test only after completion of two to three instructional units. Although KEDI provides teachers with test items and other evaluation materials in all the subject areas, teachers may decide to use their own test.

With the test results, the teacher will construct a classroom profile of student attainment of the objectives for each subject areas. These test results on achievement levels of the major objectives will provide feedback which will identify the points within the instructional process which need revision and improvement. The summative test results can also be used to assign grades to the students. The results can also be used by teachers to evaluate the effectiveness of their own instruction.

A breakdown of time typically spent on each of the instructional stages is: Diagnosis - 10%; Teaching/Learning - 60%-70%; Extended Learning - 10%-20%; and Evaluation - 10%. Through this process of instruction it is believed that individual students will experience qualitatively superior learning. Students will have access to a much richer variety of instructional resources which have been designed to accommodate individual differences in learning rates. The students will also know what is expected of them and will be able to monitor their own progress through the sequence of learning objectives. They will also have available to them a wide range of supplementary instructional resources including instructional television and radio. All of these should contribute to the student's mastery of the unit objectives.

IV. Implementation and Outcomes

1. Small Scale Tryouts

Since 1973, four tryouts(KEDI, 1973,74,75) were conducted on a small scale to test the effectiveness and feasibility and to make necessary revisions of the instructional programmes developed in accordance with the new KEDI instructional model. The schedule for the small scale tryouts is presented in the Table 1.

Table 1. Schedule of Small Scale Tryouts

		The 1st Tryout May 28-June23, 1973	The 2nd Tryout Nov.5-Dec.1, 1973	The 3rd Tryout Oct.2-Nov.30, 1974	The 4th Tryout May 6-June 28, 1975
	Schools	2	3	4	2
	Classes	12	20	19	14
	Students	745	1482	1541	1050
	Grades	3rd, 5th	2nd	3rd	5th
Sub-jects	Subject matter	Arithmetic, Science	Moral Edu., Korean Lang., Arithmetic	Moral Edu., Korean Lang., Arithmetic, Music, Social studies, Science, Physical Edu., Art.	Moral Edu., Korean Lang., Arithmetic , Music, Social studies, Science, Physical Edu., Fine Arts, Industrial arts.
	Duration	4 weeks	4 weeks	8 weeks	10 weeks

The results of the four tryouts show that the new instructional system improved student achievement by 10 points on an average, compared with those under the conventional system.

Table 2 compares student achievements between the experimental and control groups. As noticed in the table, the experimental group shows significant improvements of student achievements in all subject areas over the control group.

Table 2. Comparison between Experimental and Control Groups[1]

Subjects	2nd Tryout		3rd Tryout	
	Exp. gr.	Cont. gr.	Exp. gr.	Cont. gr.
Moral ed.	90.0	79.0*	84.8	76.5**
Korean lang.	86.4	82.3*	59.3	52.1**
Social stud.	-	-	63.9	53.1**
Arithmetic	84.9	75.8*	62.0	44.7**
Science	-	-	70.8	58.4**
Phy.ed. Theory			62.1	51.2
Practice				77.6
Music	-	-	64.1	53.3**
Fine arts	-	-	59.2	50.3**

* : Significant at the level of .01
** : Significant at the level of .001

[1] A noticeable difference in the Achievement scores between the second and third tryouts is attributed to the difference in general achievement levels of the two student groups that participated in the two different tryouts.

Analysis of achievement data collected during the four tryouts indicate that the new instructional programmes tend to offer equal amount of help to student groups with different ability levels.

We have no sufficient evidence yet to show that the new instructional programmes are causing significant changes in learning attitudes and study habits of students. One important fact that needs special mention here is that there were drastic decline in the number of absentees.

The teachers involved in the tryout were given a reasonable amount of training for the new instructional strategies. Still, when actual programme started, many of them felt at least during the first one or two weeks that they had to work harder in the new programme than in the conventional teaching. This feeling of over-loadedness, however, gradually disappeared as they gained experiences with the new programme.

2. Comprehensive Demonstration

Throughout each phase of our small scale tryouts each successive phase attempted to resolve the problems encountered in the preceding tryout. In accordance with the feedback results from the pradtical situation, appropriate adjustments were made in our original strategies. Now, having gained enough confidence in our strategies from the small scale tryout situation, we were then ready to apply our strategies on a comprehensive scale in September 1975.

The comprehensive demonstration involves two types of schools - demonstrative and cooperative. The former, 14 schools, takes on the characteristics of experimental schools in which necessary experiment is carried out. And the latter focuses on a feasibility study for a nationwide diffusion, and identification of problem areas and development of appropriate solution measures.

At the initial stage of diffusion, a total of 130 schools were selected as cooperative schools in 1975 through the cooperation of the district offices of education in order to broaden the diffusion machinery of the new instructional strategies. They were allowed ample room for variation of the new system in such way that it could meet the unique needs of individual schools. These schools would then serve as mediating centers and coordinate innovative activities in each district. In addition, institutional arrangements were made to effect participation of the researchers at the local school board levels in the production process of a variety of instructional materials. This involvement of key personnel in the field will do much to pave the way for nationwide application of the new programmes.

The comprehensive demonstration will further be expanded until all grades from 1st through 9th are covered.

V. Cost Implications

This section presents information on the component costs to be incurred in the development and application of the instructional system. Table 3 shows the component costs.

The estimated average cost is $22.36 at 7.5% discount rate, if the number of students is 100,000. If the number of students is 1,000,000 equivalent to one sixth of the total number of elementary school children, the cost drops to $5.84, showing a decreasing trend as the number of students increases. It seems clear that the instructional strategies, designed to improve the quality of education, does not cause a significant burden in terms of cost, though the projections were made on a provisional basis.

Table 3. Estimated Componen Costs of the KEDI Instructional System[1]

	Annualized at discount rate		
	0%	7.5%	15%
System development and Start-up costs	$194,000	$381,000	$621,000
Production costs per program (Recurrent cost plus capital costs)			
Television (20 minutes)	$641	$710	$794
Radio (15 minutes)	29	30	31
Transmission System Costs Per Channel (Recurrent cost plus capital costs)			
UHF TV (Ch. 20 and 26)	$221,000 ($88/hr)	$291,000 ($116/hr)	$374,000 ($150/hr)
FM Radio (104 MHZ)	$119,000 ($48/hr)	$156,000 ($62/hr)	$200,000 ($80/hr)
Reception site costs per student			
TV only	$1.18	$1.32	$1.47
Radio only	.07	.08	.08
Printed materials only (Teacher's guide and student workbook)	2.60	2.60	2.60

[1]The component costs are annualized by using the standard accounting annualization formula, $a(r, n) = (r(1+r))^n/((1+r)^n -1)$. The annualizations are based on spreading costs over a hypothetical lifetime in project, capital and equipements.
Source: Dean T. Jamison and Yoon Tai Kim. The Cost of Instructional Radio and Television in Korea, 1976(Unpublished paper for the International Conference on Education and Research in Educational Broadcasting to be held at the Open University, England, in April, 1976)

VI. Conclusion

The new instructional strategies, designed to seek fundamental measures for improving quality of instruction, has been developed by KEDI as part of the Elementary - Middle School Educational Development Project for 1973 - 1978.

This project focuses on the development of a new instructional system, which will provide the Korean youngsters with a high quality of education at low unit cost. The new system has been put into four tryouts, in which its effectiveness and feasibility were fully validated. But there are many problems yet to be solved in the way to a nationwide application of the new system. These problems will be tackled as the project proceeds through comprehensive demonstrations.

The instructional strategies presented here are not a final product but subject to revision on the basis of the tryout results. Particularly, incorporation of the instructional system into a total educational system requires further study.

Bibliography

Bloom, B. S. Learning for Mastery, Evaluation Comment, Vol. 1 No.2, Center for Study of Evaluation of Instructional Programs, University of California, Los Angeles, 1968.

Kim, H. K. Mastery Learning in the middle school. Seoul: Korean Institute for Research in the Behavioral Sciences. 1970.

Korean Educational Development Institute. Toward a New Instructional System-scale tryout. Seoul: Korean Educational Development Institute. September 1973.

Korean Educational Development Institute. An Application of a New Instructional Model-Summary Report of the second small-scale tryout of the KEDI Instruction System. Seoul: Korean Educational Development Institute. March 1974.

Korean Educational Development Institute. An Application of a New Educational System-Report of the third small-scale tryout of the KEDI Educational System. Seoul: Korean Educational Development Institute, March 1975.

Lee, Y. D. Interaction improvement studies on the mastery learning project. Seoul: Educational Research Centre, Seoul National Univ. 1971.